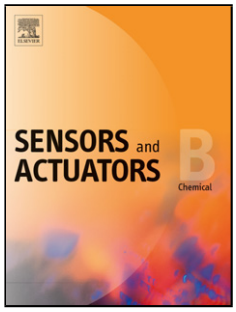

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Facile synthesis of bimetallic Ag-Cu nanoparticles for colorimetric detection of mercury ion and catalysis

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Highlights :

- Bimetallic Ag-Cu NPs were synthesized by using sodium citrate as protector.
- The bimetallic Ag-Cu NPs can be used as colorimetric probe for Hg^{2+} with detectable minimum concentration of 0.51 nM.
- The bimetallic colorimetric probe can be expanded the application in from a local campus lake and a natural lake named Chagan lake.
- The bimetallic NPs exhibited high catalytic performance in the reduction of nitrophenols and $K_3Fe(CN)_6$.

Abstract: Here, we reported on a route to the facile synthesis of bimetallic silver doped copper nanoparticles (Ag-Cu NPs) by $AgNO_3$ and $CuSO_4$ in the presence of sodium borohydride and sodium citrate. The present work described the preparation of the Ag-Cu NPs with sodium citrate and the use of them in colorimetric detection of mercury (II) ions. Ag-Cu NPs with an average diameter of 9.0 ± 0.8 nm were prepared via two step reduction at room temperature. The Ag-Cu